REMARKS

Claims 8-10, 14-22 and 31-41 are pending in this application. Entry of these remarks is requested to place the claims in condition for allowance. Claims 8-10, 14-16, 20-21, 31-35 and 39-41 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Okumura (JP 06-299312). Claims 8-10, 14-22 and 31-41 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Okumura, in view of Applicant's disclosure of the prior art.

Remarks Directed to the Rejection of Claims 8-10, 14-16, 20-21, 31-35 and 39-41 Under 35 U.S.C. §103(a), as Being Unpatentable Over Okumura (JP 06-299312)

The Federal Circuit noted "a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the Applicant." *In Re Gurley*, 7F3d 551, 31 USPQ2d 1130 (Fed. Cir. 1994). In addition, the MPEP states that the totality of a prior art reference must be considered, and preceding contrary to accepted wisdom in the art is evidence of non-obviousness (MPEP §2145, paragraph X.D.3.).

Okumura (JP 06-299312) is cited for teaching a steel having an iron-aluminide intermetallic alloy layer with a thickness of about 1 micron or less, but with comparative examples of up to 5 microns (Paper No. 09212006, page 2, paragraph 4). In addition, it has been stated that "although Okumura claims an iron-aluminide intermetallic alloy layer thickness of 1 micron or less, an Applicant claims a thickness of "greater than 1 micron," the thicknesses of 1 micron and "greater than 1 micron" are so close that, unless shown otherwise, one of ordinary skill in the art would not expect there to be a patentable distinction between the properties of the two thicknesses."

Applicant submits that Okumura teaches away from an iron-aluminide intermetallic alloy layer thickness greater than 1 micron that is adjacent to the mild steel substrate per pending independent claims 8 and 31. For example, an English translation of paragraph 9 of Okumura states in part:

> the intermetallic-compound layer which consists of iron-aluminum is also hard, it is weak and a processing student will deteriorate if the thickness exceeds 1 micrometer, according to this invention, it is necessary to set to 1 micrometer or less thickness of the intermetallic-compound layer which consists of iron-aluminum.

While an an English translation of paragraph 4 of Okumura states in part:

> Since this Fe-aluminum alloy layer is hard and it is weak, if an alloy layer grows thickly, the workability of a plating steel plate will deteriorate remarkably. Therefore, added about 3% of Si of an aluminum content, the Fe-aluminum-Si alloy layer thin to an interface with a steel plate base was made to form during a plating bath conventionally, and growth of a Fe-aluminum alloy layer is controlled.

Thus, Okumura is submitted to teach that an iron-aluminide intermetallic alloy layer thickness cannot functionally exceed 1 micron, that in fact this is the extreme upper limit of utility. Additionally, Okumura teaches in paragraph form that an Fe-Al-Si interfacial layer separates the steel substrate from the overlying iron-aluminide, regardless of the thickness of this iron-aluminide layer. Table 2 of Okumura teaches that samples having an iron-aluminide intermetallic alloy layer thickness of greater than 1 micron have unacceptable crack initiation. Therefore, even though Okumura shows comparative examples having intermetallic layers of 1.5 microns, 2 microns, 3 microns and 5 microns, these examples teach that an iron-aluminide intermetallic alloy layer thickness of greater than 1 micron is unacceptable. Applicant therefore

submits that one with ordinary skill in the art upon reading this prior art reference would be led away from the present invention.

The fact that the present invention requires a 1 to 5 micron thick iron-aluminide intermetallic alloy layer and such a layer provides is ADJACENT to the steel as opposed to having an interfacial layer indicates that this references does not render the pending claims obvious over the prior art of record. Additionally, the desirable characteristics associated with the thick iron-aluminide as claimed is respectfully submitted to amount to a surprising result relative to the teachings of Okumura. As a result, it is respectfully submitted that the above detailed claim recitations are entitled to patentable weight over Okumura.

Regarding claim 9, although Okumura teaches dipping a steel into a plating bath containing 20-80 weight percent aluminum, this reference is devoid of an aluminum concentration in the iron-aluminum intermetallic layer. Regarding claim 10, the iron-aluminum intermetallic layer has a thickness greater than 2 microns and less than 5 microns. As stated above with regard to claim 8, Okumura teaches away from this claimed subject matter.

Regarding claim 14, Okumura is cited as having an upper zinc layer (Paper No. 09212006, page 2, paragraph 4). However, Okumura teaches that an upper layer is comprised of 20-80 weight percent aluminum with the remainder essentially zinc (paragraph [0010]). In contrast, claim 14 has an upper layer of majority zinc layer. Therefore, the upper zinc layer disclosed in the present invention is not taught by Okumura.

Regarding claims 20 and 21, as stated for claim 9, Okumura is devoid of any teaching of the concentration of the iron-aluminum intermetallic layer. Furthermore, an iron-aluminum intermetallic layer substantially devoid of rare earth metals is not present.

In addition to the above arguments, claims 9, 10, 14-16, 20-21 depend upon claim 8, which is believed to be in allowable form. Applicant therefore submits that these claims are likewise in allowable form. Applicant also submits that there are other bases for the allowance of these dependent claims that can be made of record.

Regarding claims 31-35 and 39-41, Applicant submits that the same arguments stated above with respect to claim 8 and all claims depending thereon, overcome the rejection of claims 31-35 and 39-41 under 35 U.S.C. §103(a), as being unpatentable over Okumura.

On the basis of the above remarks, reconsideration and withdrawal of the rejection of claims 8-10, 14-16, 20-21, 31-35 and 39-41 under 35 U.S.C. §103(a), over Okumura is requested.

Remarks Directed to Rejection of Claims 8-10, 14-22 and 31-41 Under 35 U.S.C. §103(a), Over Okumura, in View of Applicant's Disclosure of the Prior Art

The above statements related to prior art reference teaching away from an invention and said teaching away being evidence of non-obviousness is incorporated herein by reference. Regarding claims 8-10, 14-16, 20-21, 31-35 and 39-41, Applicant re-states the above arguments regarding these claims herein by reference and submits that these claims are in allowable form.

Regarding claims 17-19 and 22, these claims depend upon independent claim 8 which is believed to be in allowable form, and therefore are also believed to be in allowable form. Applicant also submits that there are other bases for the allowance of these dependent claims that can be made of record.

Regarding claims 36-38, these claims depend upon independent claim 31, which is believed to be in allowable form. Therefore, claims 36-38 are also believed to be in allowable

form. Applicant also submits that there are other bases for the allowance of these dependent claims that can be made of record.

Summary

Claims 8-10, 14-22 and 31-41 are submitted for consideration. Each claim is believed to be in allowable form and directed to patentable subject matter. Reconsideration and withdrawal of the outstanding rejections and the passing of this application to issuance are solicited. Should the Examiner find to the contrary, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any remaining issues.

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Respectfully submitted,

By 

Avery N. Goldstein, Ph.D.
Registration No.: 39,204
GIFFORD, KRASS, GROH, SPRINKLE,
ANDERSON & CITKOWSKI, P.C.
2701 Troy Center Drive, Suite 330
Post Office Box 7021
Troy, Michigan 48007-7021
(248) 647-6000
(248) 647-5210 (Fax)
Attorney for Applicant

MAH/aka